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ARCHITECTURAL DRAWING PLATES



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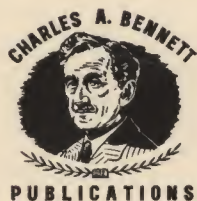
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ARCHITECTURAL DRAWING PLATES

BY

FRANKLIN GEORGE ELWOOD, B. Arch.

Head of Department of Architectural and Mechanical Drawing, Mooseheart,
Illinois, Formerly Assistant Professor of Manual Arts, Bradley Polytechnic
Institute. Peoria, Illinois, Registered Architect—State of Illinois,
Author of Problems in Architectural Drawing.



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PREFACE

THE purpose of this series of plates is to present, in a compact form for the use of students, a collection of the common details or elements which compose a house.

These details are accompanied by the complete working drawings of a small cottage, which affords an example of the use or application of these symbols and details. While the details shown are general and embody the characteristics of the best type of construction, they may, with slight changes, be made applicable either to the cottage shown or to other small buildings of similar nature.

The plates are not intended to be a rigid course. The instructor may select and arrange material as fits his own conditions and requirements.

These plates, as revised, are intended to be used in conjunction with *Problems in Architectural Drawing, Book I*, for further text material and drawing problems, thus affording a wider application of the details presented there.

FRANKLIN G. ELWOOD.

ARCHITECTURAL DRAWING PLATES

BORDER-LINE LAYOUT

THE border-line layout for all of the plates is 12"x16".

The size of paper shown in Fig. 1 is recommended, namely, half of a super royal (19"x27") or 13½"x19". This gives a ¾" trim line at either side, with a ¾" border on all sides. A cap size (13"x17") could be used with a ½" border line on all sides, but the first-named size is preferable.

Technic is the kind and quality of line used in making the drawing, the method of dimensioning and lettering, and the character of figures, arrowheads, etc., employed. Architectural technic is similar to that used in mechanical drawing, except that more freedom is allowed in the lettering and line work. On the beginning plates it will be noted that all lines exactly meet; that the outlines of sections are silhouetted with a heavier line; that unimportant lines are made lighter, and that cross-section lines are put in with dilute india ink.

In the plans of the cottage, the wall and partition lines are made heavier, and in the elevations the outlines of all main features are treated in a similar way. The shingle, brick, and stone lines in the elevations should be shown in dilute ink. Vertical single-stroke letters should be employed.

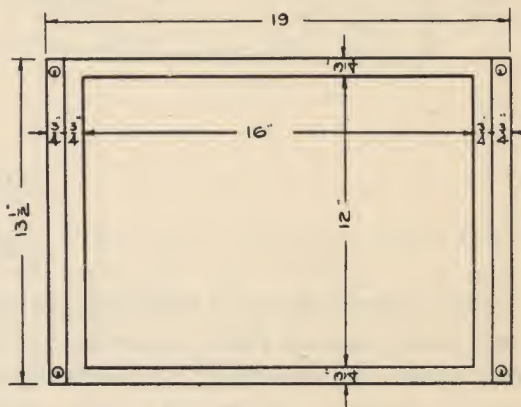


FIG. 1

PLATE 1

ARCHITECTURAL SYMBOLS

Architectural symbols are used to represent doors, windows, and other more or less complex elements on small-scale plans. It is obvious that the exact representation of the window, shown in Fig 2a, could not be made at the ¼"=1'-0" scale, for example; therefore a symbol or a conventionalized method of indication is employed: Fig. 2b. At a scale of ⅛"=1'-0" this symbol is still further simplified, Fig. 2c. It must be remembered that the general working drawings at a small scale are only intended to show general dimensions and a general

relation of parts, and that the actual construction of parts is left to the details. The student should note that the width of a window is taken from the face of one pulley stile to the other.

Wood-frame walls and partitions may be left white in the plan, or they may be shaded with freehand section lines inked with dilute ink. Electric-light symbols have been standardized, as indicated. The application of these various symbols at the ⅜" scale may be seen on the Plates 15 and 16.

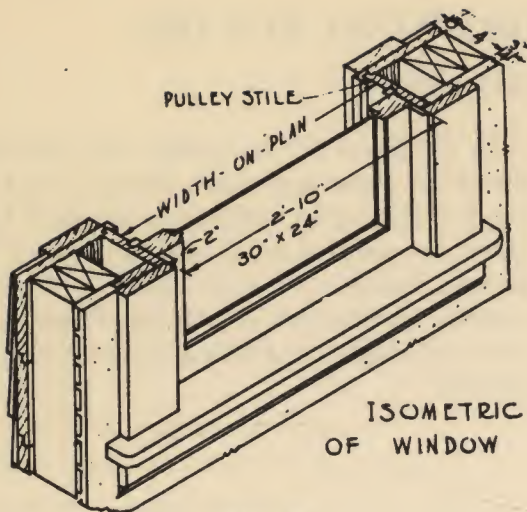
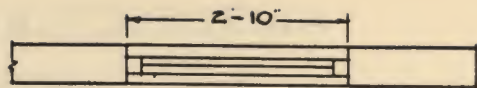
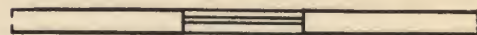


FIG. 2a



$\frac{1}{4}$ OR $\frac{3}{8}$ " SCALE SYMBOL

FIG. 2b



$\frac{1}{8}$ " SCALE SYMBOL.

FIG. 2c

PLATE 2

PLAN SYMBOLS

The symbols shown in this plate, in common with those of Plate 1, are for typical size units and according to generally accepted practice. Sizes vary widely, however. Fireplaces and cabinets are proportioned to suit the room size and space.

Figs. 3a and 3b show where the symbols for the fireplace and cabinet are taken.

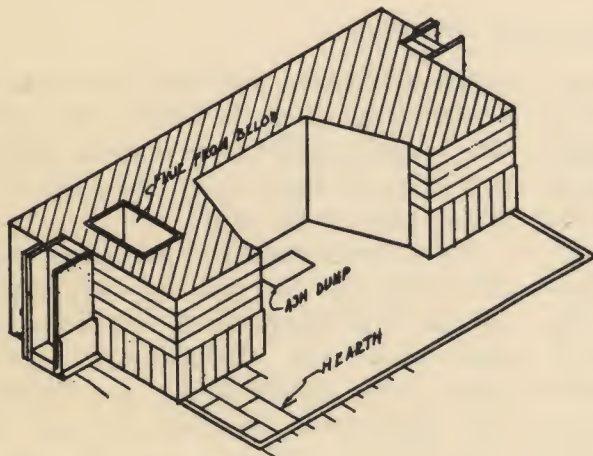


FIG. 3a

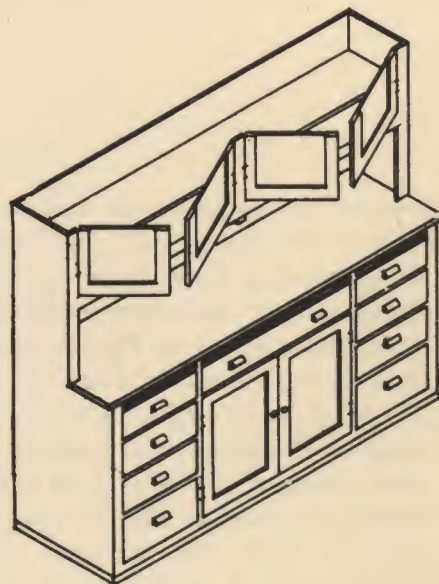


FIG. 3b

PLATE 3

FOUNDATIONS

Foundation walls may be made of concrete, brick, or stone.

Two types of concrete walls are shown, both of poured concrete to the grade line; brick or stone being used above grade. One type is designed for a site where the soil contains quantities of moisture.

Two types of girders (wood and steel) are given, with examples of columns and

brick piers; also types of concrete footings. Footings should always be designed for the loads to be supported and the bearing capacity of the soil.

In drawing the plate, the student should refer to the box sill, Plate 4, also to windows, Plate 8.

Note that the basement window is similar to the casement window, except that the former is hinged at the top.

PLATE 4

SILL CONSTRUCTION

The sill which rests directly on the masonry foundation wall affords a support for the wood superstructure. Attached to the sill indirectly is the water table, the purpose of which is to shed the water and prevent it from seeping under

the sill. Four types of sills are shown with various forms of wall covering. An isometric of the first type, the box sill, is shown in Fig. 4a. The drawing for the box sill should be developed as shown in Fig. 4b.

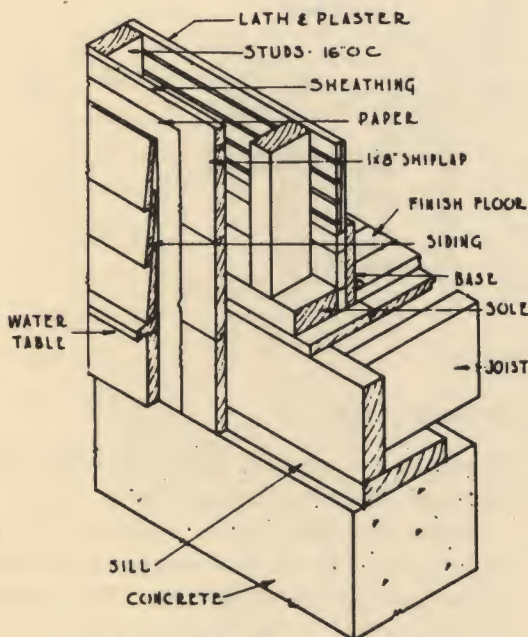


FIG. 4a

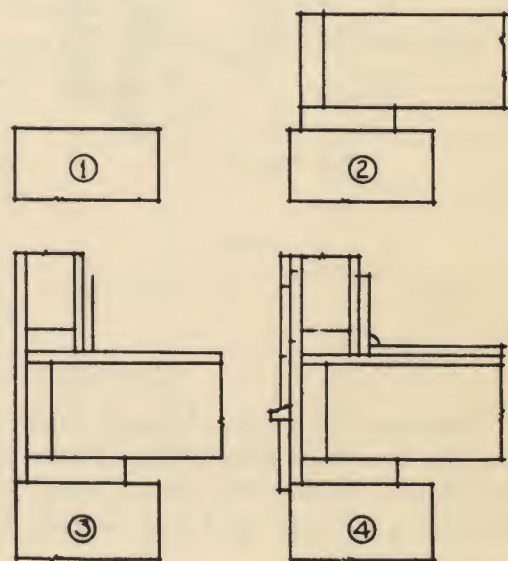


FIG. 4b

PLATE 5

CORNICES

The purpose of the cornice is to afford a transition from the vertical walls of the house to the sloping surface of the roof. It sheds the water from the house and usually has a gutter—built-in or hung type.

There are two kinds of frame cornices, open and box. In the open type the rafter ends are exposed, as shown in the plate.

Four typical cornices are given with four different types of gutters and with four examples of vertical wall construction. Fig. 5a illustrates the box cornice of the first type shown in the plate, and Fig. 5b shows the stages to be followed in drawing the same. The other types may be developed by a similar process.

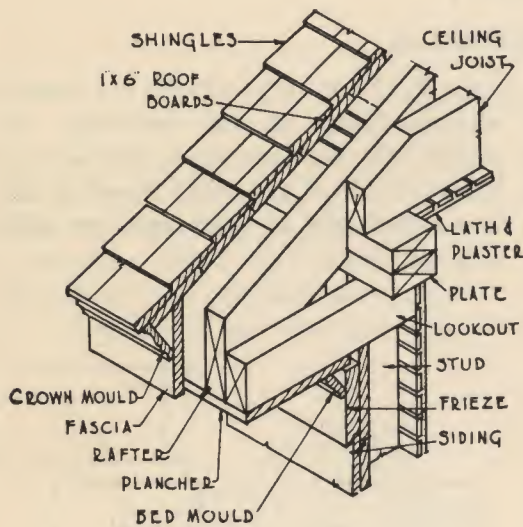


FIG. 5a

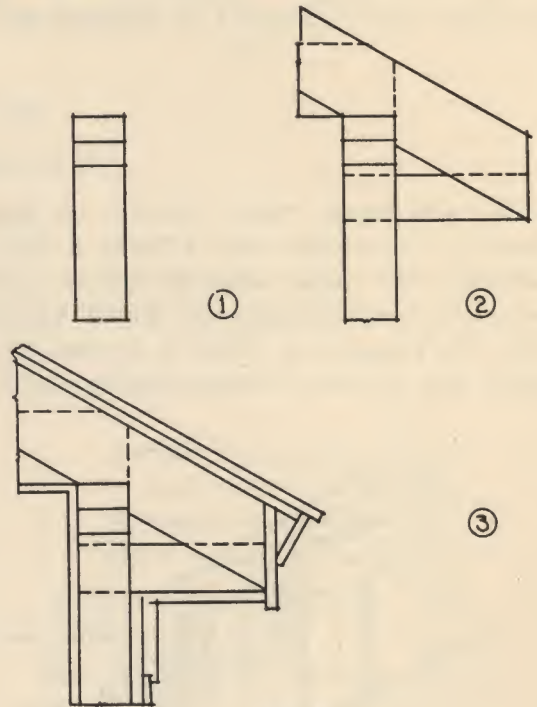


FIG. 5b

PLATE 6

BALLOON FRAME CONSTRUCTION

There are two types of frame construction, the braced or combination frame and the balloon frame, the latter being perhaps more common and more economical in construction.

A vertical section is here shown through

the cornice, second floor, and sill of the average balloon frame house.

Draw the plate at a scale of 3"=1'-0", laying out the skeleton members first, as shown in the small sketch. The sketch is to be omitted in the finished plate.

PLATE 7

DOORS

Two exterior and three interior doors are shown in this plate, also details of door jamb and sill and full-size sections through the doors. Door sizes vary. Exterior doors are usually 3'-0" wide and the height 6'-8", 6'-10", or 7'-0". Note that the widths and heights are in even inches. Draw the plate as given.

PLATE 8

WINDOWS

There are two common types of windows, double-hung and casement. In this plate two examples of the better type of construction of each are shown.

Exterior and interior elevations of the windows are drawn at $\frac{3}{4}"$ scale. The elevations, when applied to drawings made at the $\frac{1}{8}"$, $\frac{1}{4}"$, or $\frac{3}{8}"$ scales, are similarly indicated, with the exception that the muntins may be shown by a single line and the

sash stop line omitted. See Plates 17 to 20, inclusive.

An isometric of the jamb and sill section with the names of parts, is shown in Fig. 6a. The detail sections should be drawn according to the method shown in Fig. 6b.

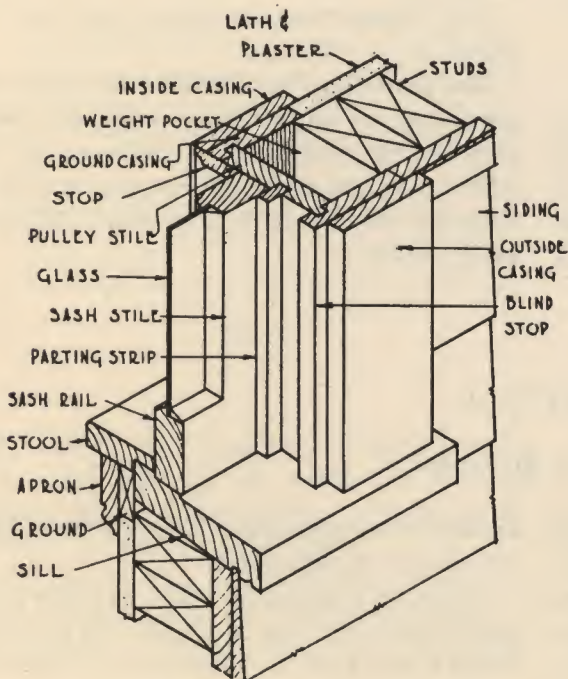


FIG. 6a

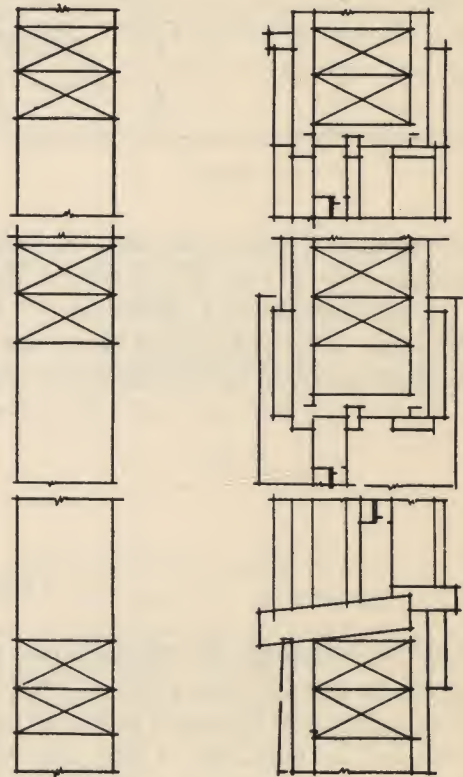


FIG. 6b

Note that windows are often dimensioned by glass size, the width being given first; thus, a 30"x24" glass means a sash width of 34" or 2'-10". For a double-hung window the total sash height would be made

up of 3" for the bottom rail; 24" for the lower glass, with a 1" meeting rail, 24" for the upper glass, with 2" for the upper meeting rail, making a total height of 4'-6".

PLATE 9

Roofs

This plate shows the method of laying out a roof-framing plan, and of determining the location of hips, valleys, and rafters in any regular pitch roof.

The common pitches are $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{2}$.

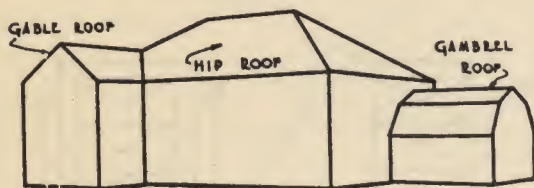


FIG. 7

In terms of rise and run, $\frac{1}{4}$ pitch is equivalent to a run of 12 and a rise of 6: $\frac{1}{3}$ pitch—run of 12 and rise of 8; $\frac{1}{2}$ pitch—run of 12 and rise of 12; or the total rise may be found by dividing the span of

the roof by the required pitch; thus, the total rise for a $\frac{1}{3}$ -pitch roof, with a span of 24'-0", would be 8'-0".

To find the slope of a rafter, place the scale horizontally as illustrated in the plate, measuring 12 units in from the top, outer face of the plate. Then measure vertically from this point the number of units for the required pitch. The hypotenuse of the triangle will then be the slope of the rafter.

Fig. 7 illustrates the three common roof types.

The plate may be drawn as shown, or the plan may be drawn on a separate sheet, showing the thickness of rafters. In the latter case, separate sheets also would be required for the front and side elevations at $\frac{1}{4}$ " scale

PLATE 10

DORMER WINDOWS

Dormer windows are all windows which project or are cut into roofs of buildings.

Proportions of dormers must, of course, be varied to conform to the size of the building and the amount of its roof surface. The dormer also reflects the style of

architecture employed. Two common types are shown in this plate.

In drawing the plate, start with the gable type first, referring to the details for sizes. Plate 8 may also be referred to for both the double-hung and casement windows.

PLATE 11

PORCH DETAILS

The porch shown is a typical, small, Colonial, entrance porch. It is almost identical with the one used on the cottage, Plate 17, the only difference being in the height of the column.

In drawing the plate, lay out first the center line of the front elevation, center lines of the columns, and all main heights. Lay out details of the cornice in the section, and project to elevation.

PLATE 12

STAIRS

This plate represents an open-newel type of stairs from a first to a second floor. A plan and section are shown at a scale of $\frac{1}{2}"=1'-0"$. A large-scale elevation illustrates two types of construction, namely the open and closed string. In the former type, the ends of the risers and treads are exposed. The details show typical riser

scale, for example, falls on the first-floor line and the 16'-0" mark falls on the second-floor line. Fig. 8a. Then point off each foot division of the scale from 0 to 16. By drawing horizontal lines through these points, the risers will be equally spaced.

In a similar way the run of the stairs may be divided into the required number of treads. The location of the risers and treads may be projected from section to plan and vice versa.

If there were another flight of stairs in

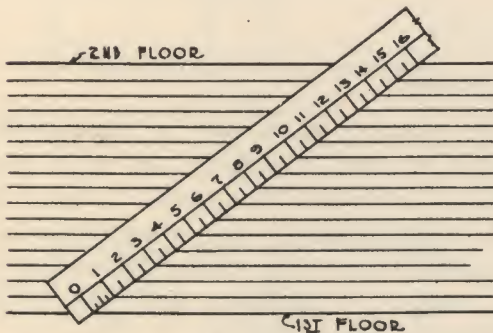


FIG. 8a

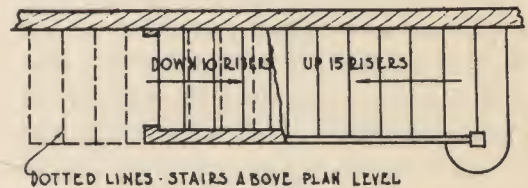


FIG. 8b

and tread, hand-rail and newel construction. In drawing the plate the first and second-floor lines should be located in the section giving the total rise.

To lay out the total number of risers in this height, place the scale diagonally on the paper so that the zero point of the $\frac{3}{8}"$

the same stairway going down to a floor below, only a part of each flight would be shown, separated by an imaginary break, and represented on the plan by a broken line marked up on one and down on the other, with the number of risers in each flight indicated. Fig. 8b.

PLATE 13

KITCHEN CABINET

A kitchen cabinet or dresser is usually built at the mill from final measurements taken at the house after the plastering has been done. It is made to fit the given space

and is brought to the job assembled, with the exception of putting on the hardware.

A typical cabinet with wood panel doors is shown in the plate. See also Fig. 3b.

PLATE 14

FIREPLACE

A fireplace, similar to the one used in the cottage, Plate 21, is shown here. The size of the fireplace depends on the size of the room, for the two should be in proportion. The proportion of the various parts of the fireplace depends upon its opening. The area of the throat, when no damper is

used, should be $\frac{1}{2}$ that of the fireplace opening. As a rule it is found more satisfactory to use one of the many patent dampers on the market.

In laying out the plate, locate all general dimensions, first projecting from plan and section to the elevation.

PLATES 15-21

DRAWINGS OF A COTTAGE

As stated in the Preface, the purpose of these plates is to afford examples of the application of the preceding details; also to show technic, procedure in making the drawings, methods of dimensioning, etc. All of the elements in the drawings for the cottage are not identical with those shown in the preceding plates, but their application can be readily seen. The plates may be drawn as given or may be used as a guide for the student in working out an original design.

PROBLEM

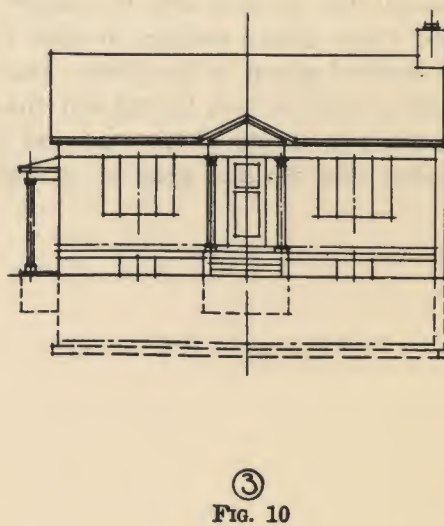
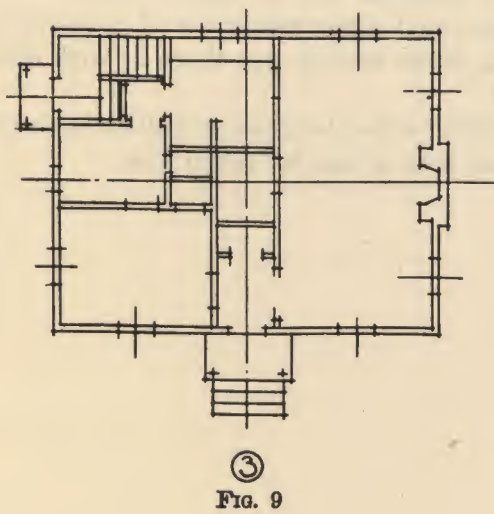
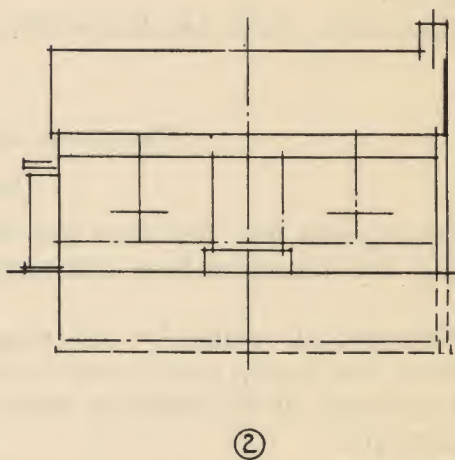
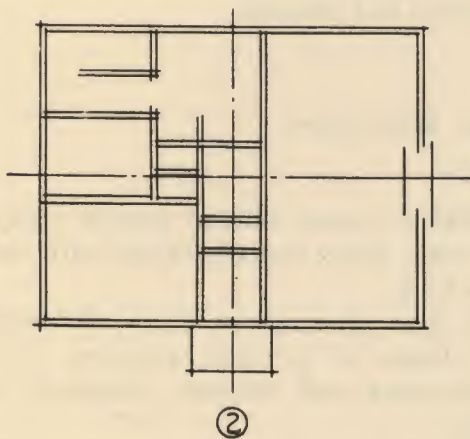
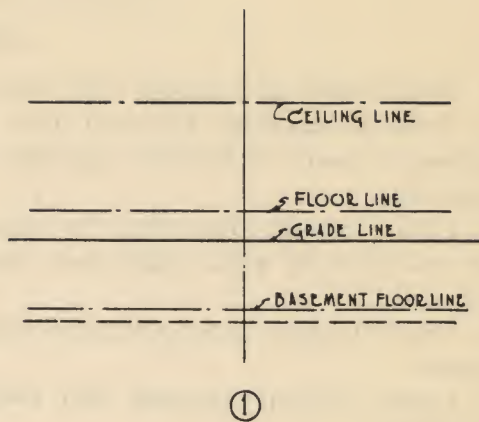
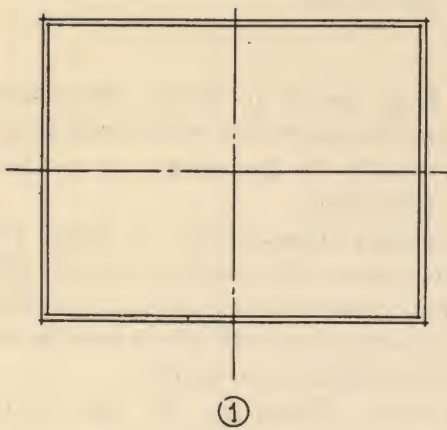
It is required that the student design a small, compact cottage for two people with accommodations for an occasional guest.

The solution, as shown in these plates, affords a small entrance hall with coat closet; a combined living and dining room with dressing closet and in-a-door bed; a compact kitchen with recessed refrigerator and range; a bedroom and bath with clothes and linen closets.

The rear door gives access to the kitchen and to the basement by means of a small entry.

The additional door to the bathroom allows its use from the kitchen or living room, without passing through the bedroom. It also affords better circulation throughout the house.

The exterior is simple and of Colonial derivation.



PROCEDURE IN DRAWING THE PLAN

(See Fig. 9)

1. Draw center and outside wall lines.
 2. Draw all partition and wall lines regardless of doors or window openings or projections.
 3. Locate all openings first by center lines and then by sash width and actual door width.
 4. Draw fireplace, bathroom, and kitchen fixtures.
 5. Locate electric symbols and switch connections.
 6. Dimension. Note that dimensions are taken from center to center of openings, and from the outer face of the sheathing on outside walls to the center of studs on inside partitions.
- Sometimes dimensions are taken from the outer face of the studs on outside walls, but when taken from the face of sheathing, overall dimensions will check exactly with overall basement dimensions.
7. Letter. Drawings of the cottage should not be inked until all are completed in pencil and checked.

PROCEDURE IN DRAWING ELEVATIONS

(See Fig. 10)

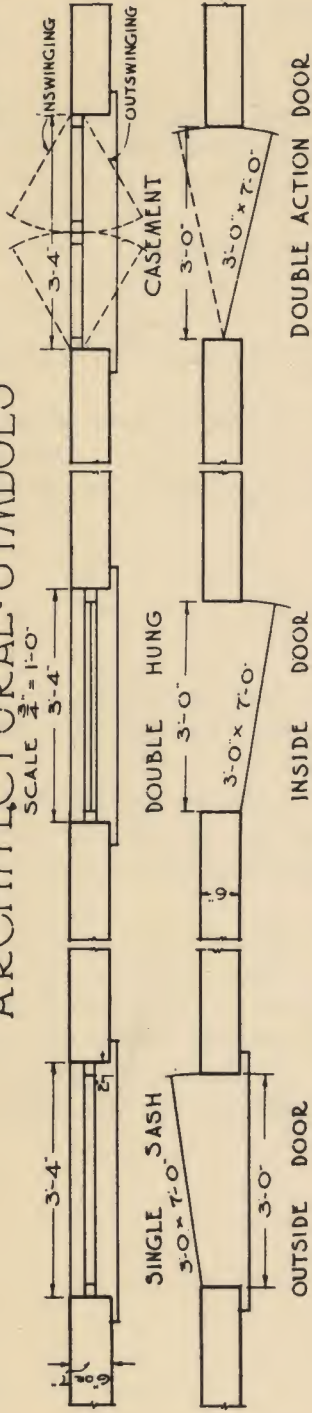
1. Draw grade line, first-floor line, ceiling line, and basement floor and footing lines.
 2. Establish all widths by referring to the plans, first laying out the center lines of all openings, doors, windows, columns, chimneys, etc.
 3. Locate the cornice and the height of the roof from either section or side view by the method given in the plate; that is, by locating rafters and laying out the required pitch in terms of the rise and run. Remember that no one plan or elevation should be drawn without careful study of all other plans and elevations with reference to it.
 4. Draw all windows, doors, shutters.
 5. Draw all porches, columns, cornice projections and returns, chimneys, and steps.
 6. Indicate all shingles, siding, brick, stone, and other materials of construction and, when inking, put these in with dilute ink.
- Outline the elevation and all main projections with a heavier inked line.

PLATES

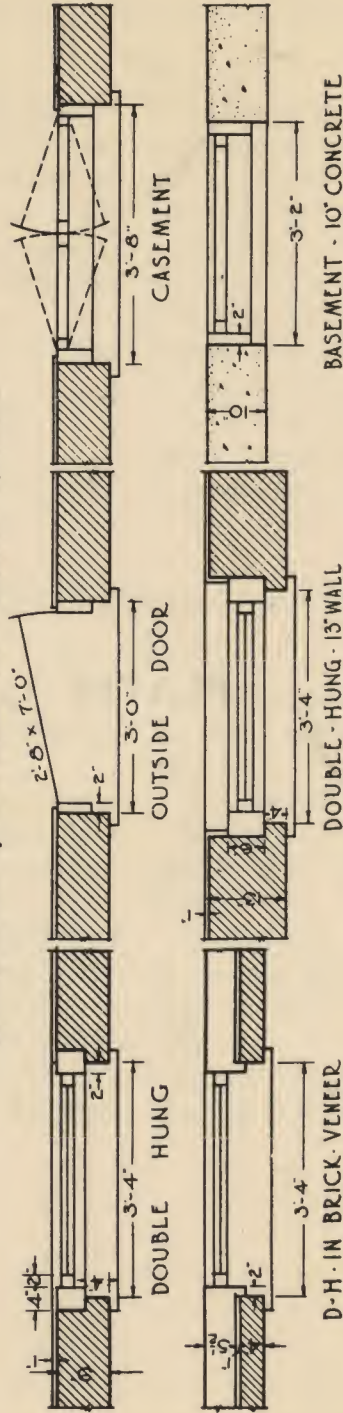
ARCHITECTURAL SYMBOLS

PLATE 1

SCALE $\frac{3}{4}" = 1'-0"$



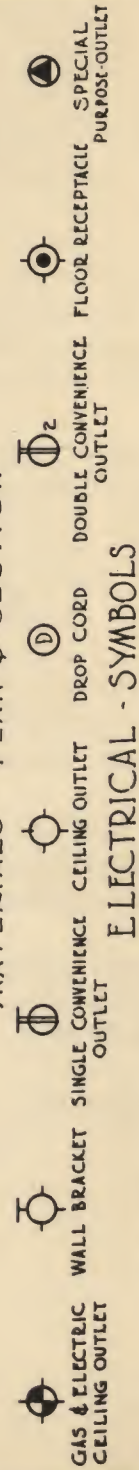
WINDOWS & DOORS IN FRAME WALLS



WINDOWS & DOORS IN BRICK WALLS



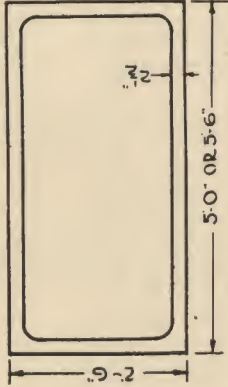
MATERIALS - PLAN & SECTION



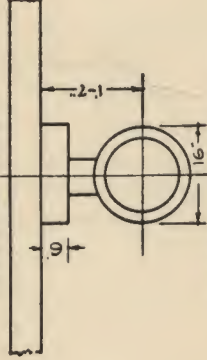
ELECTRICAL SYMBOLS

PLAN SYMBOLS

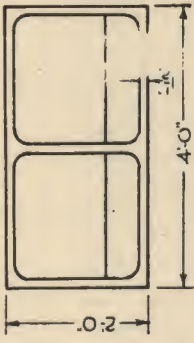
SCALE $\frac{3}{4}$ " = 1'-0"



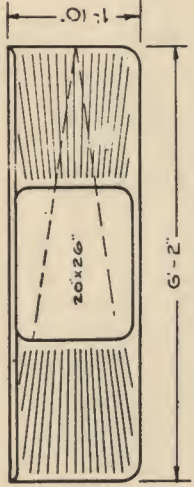
ALCOVE BATH



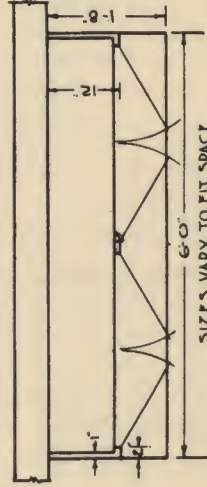
WATER CLOSET



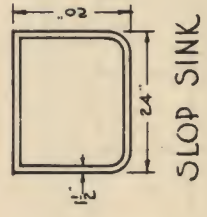
LAUNDRY TUBS



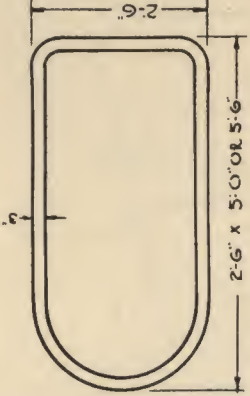
SINK
SIZES VARY



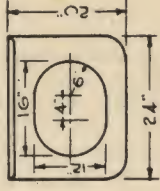
KITCHEN CABINET
SIZES VARY TO FIT SPACE



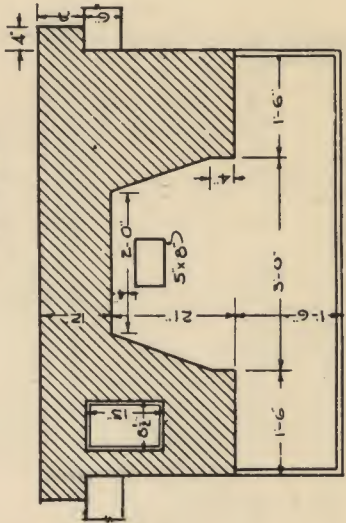
SLOP SINK



BATH



LAVATORY
SIZES VARY



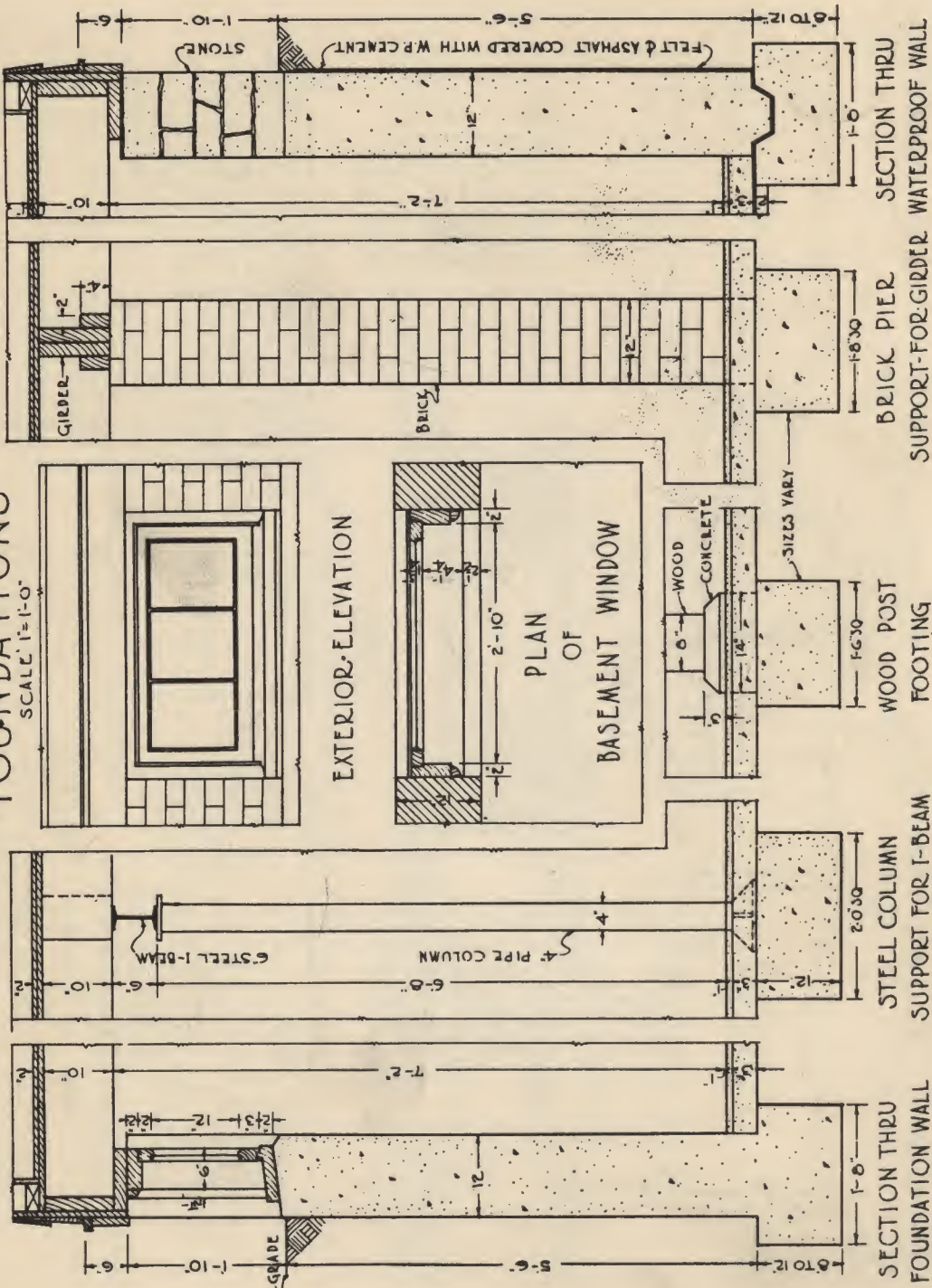
FIRE PLACE

DETAIL SIZES

- BEDS - SINGLE 3'-6" x 6'-6", DOUBLE 4'-6" x 6'-6"
- DRESSER 1'-6" x 3'-6"
- PIANO 2'-6" x 5'-0"
- CLOSET SHELVES 16"
- DEEP KITCHEN RANGE 2'-6" x 3'-6"
- DAVENPORT 2'-0" x 6'-6"
- CLOTHES CHUTE 16-30"

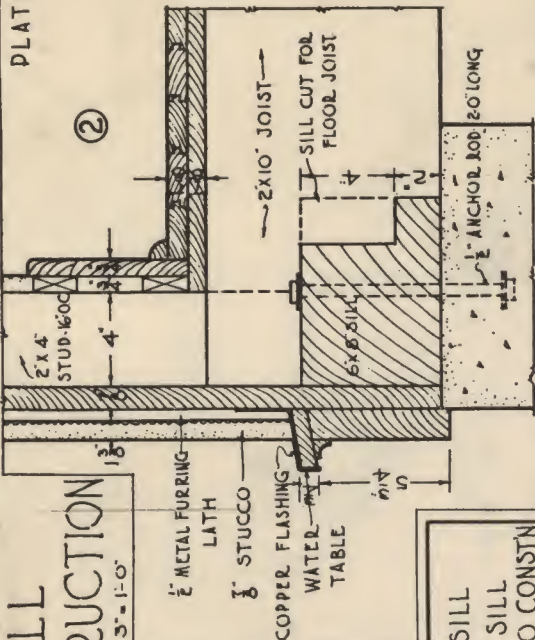
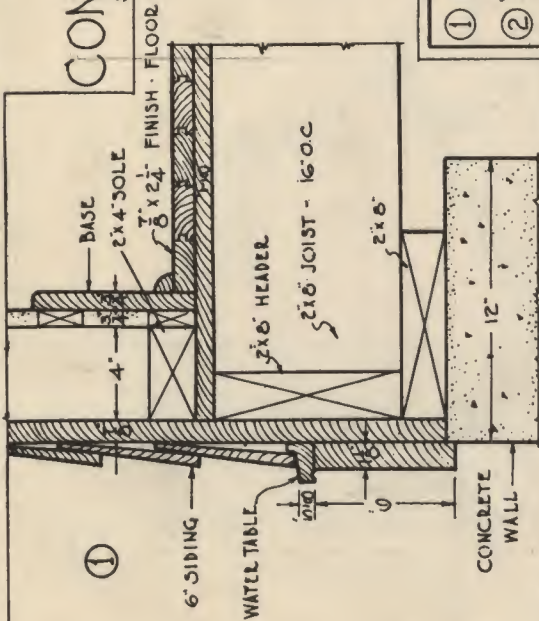
FOUNDATIONS

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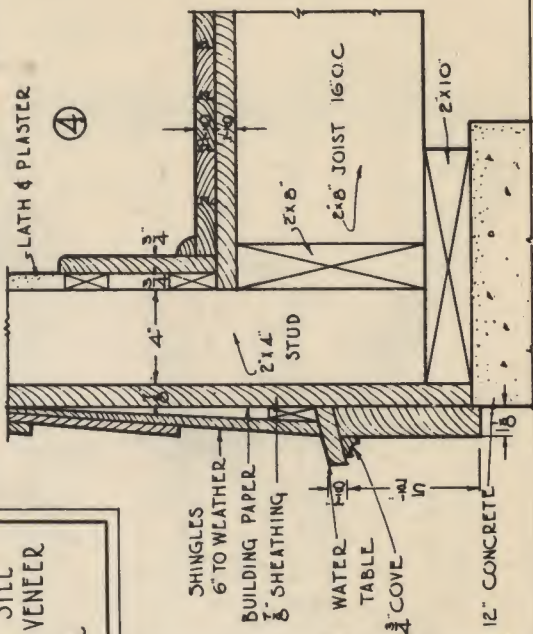
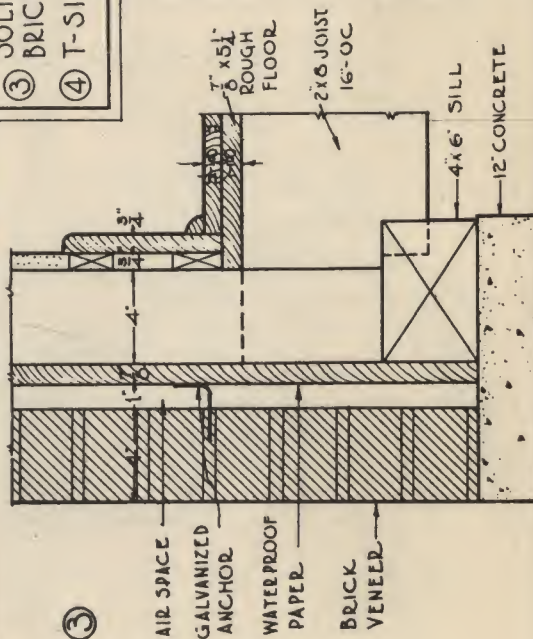


SILL CONSTRUCTION

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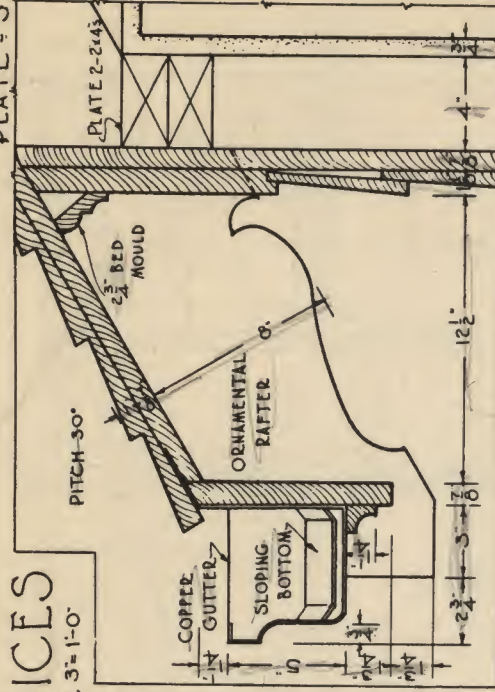
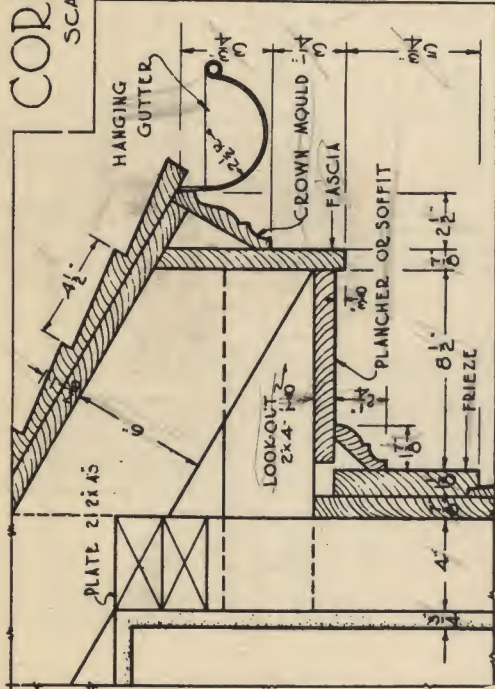
- ① BOX SILL
- ② SOLID SILL
- ③ STUCCO CONSTRUCTION
- ④ SOLID SILL
- ⑤ BRICK VENEER
- ⑥ T-SILL



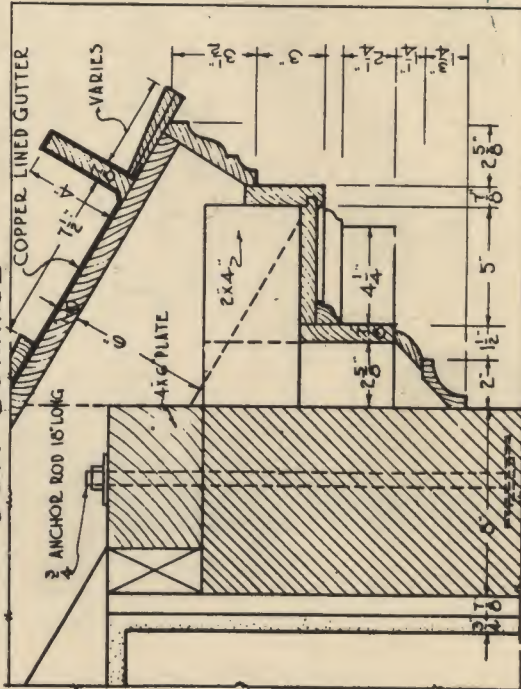
CORNICES

SCALE 3"=1'-0"

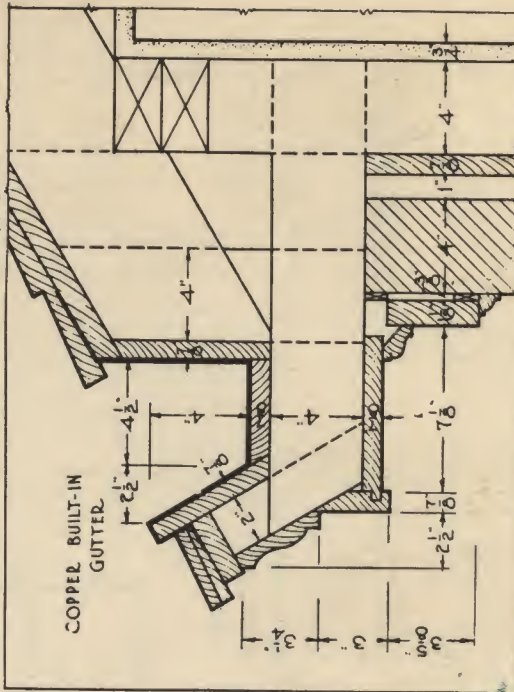
PLATE 2-2x4s



BOX CORNICE



OPEN - CORNICE

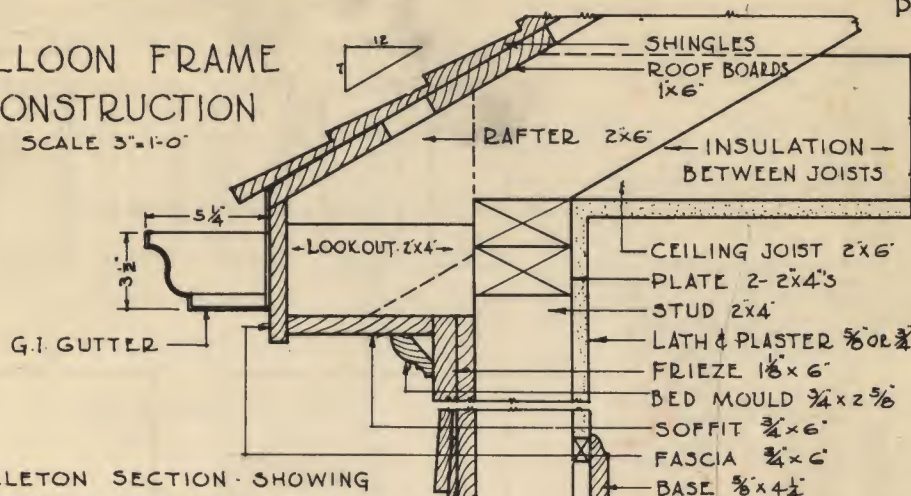


BOX CORNICE BRICK

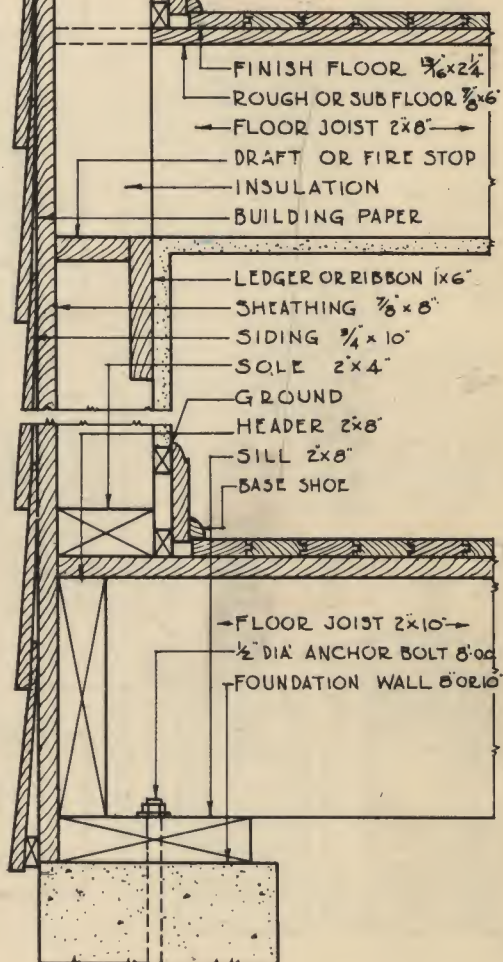
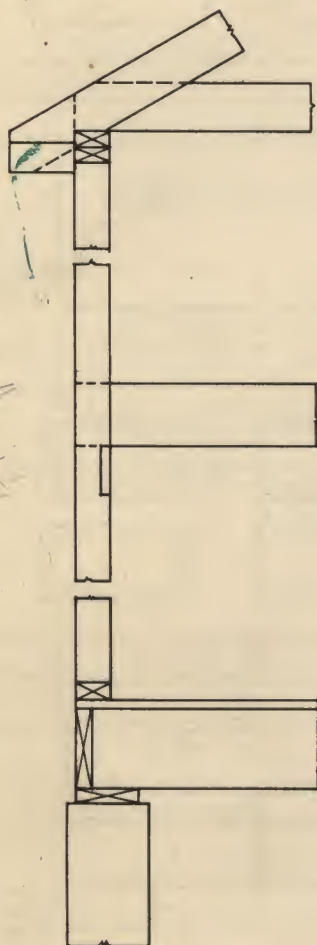
BOX CORNICE BRICK VENEER

BALLOON FRAME CONSTRUCTION

SCALE 3"=1'-0"

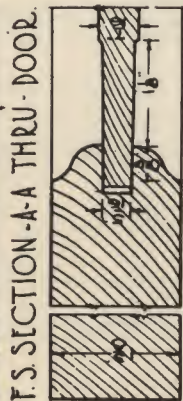
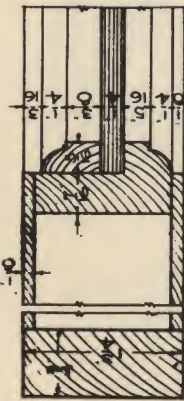
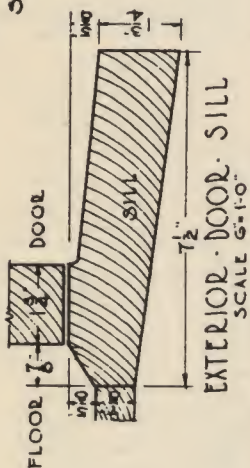
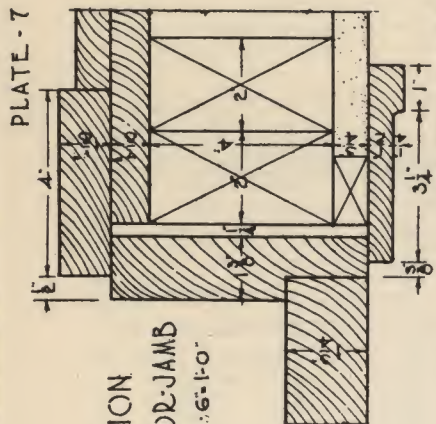


SKELETON SECTION - SHOWING
MEMBERS DRAWN FIRST SCALE 1 1/2"=1'-0"

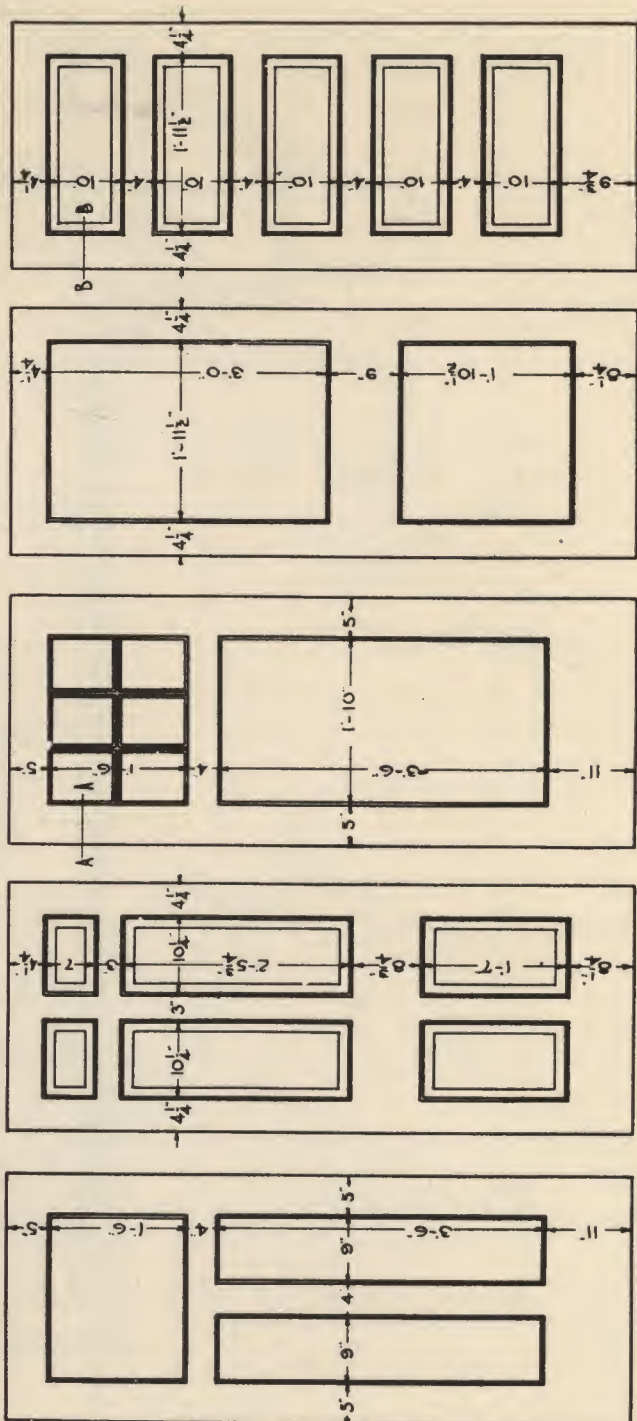


DOORS

SECTION
OF - DOOR-JAMB
SCALE 6"=1'-0"



EXTERIOR - DOOR - SILL
SCALE 6"=1'-0"



INTERIOR

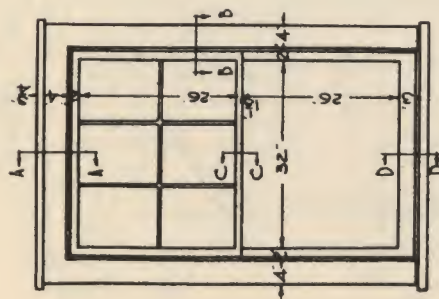
SCALE 1"=1'-0"

EXTERIOR

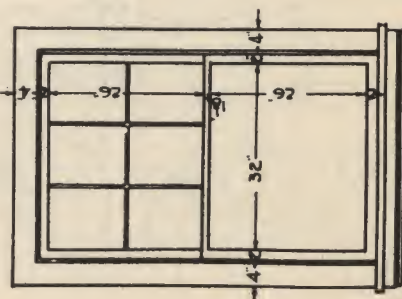
WINDOWS

PLATE - 8

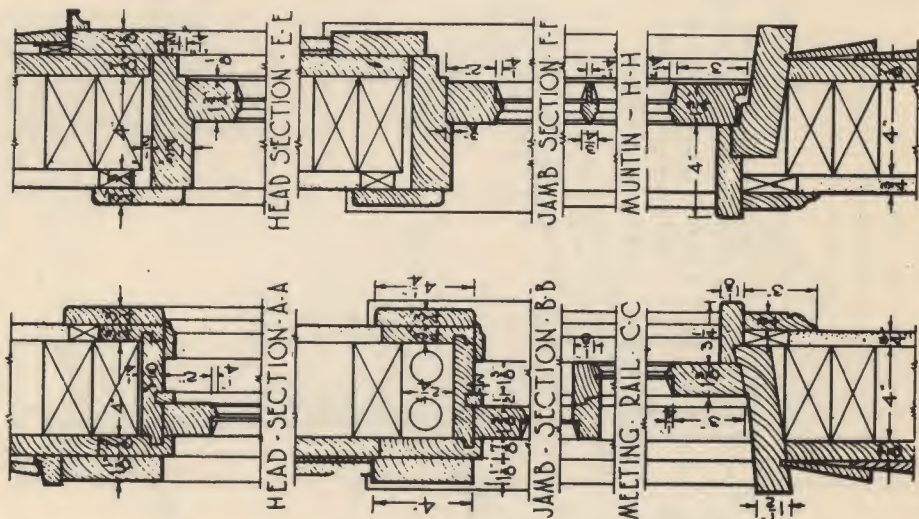
SCALE OF DETAILS 3" = 1'-0"



DOUBLE-HUNG
EXTERIOR ELEVATION

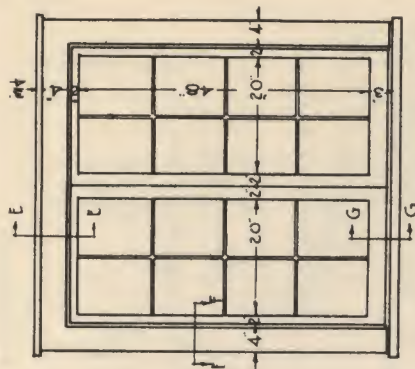


DOUBLE-HUNG INTERIOR
SCALE 3" = 1'-0"

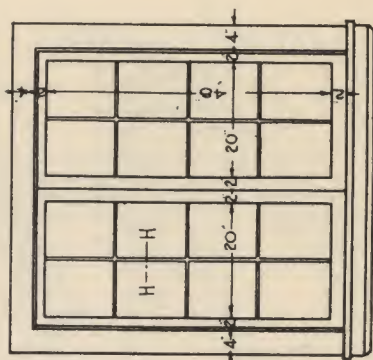


SILL - SECTION - D-D.
DOUBLE HUNG

SILL SECTION - G-G
CASEMENT



CASEMENT
EXTERIOR ELEVATION



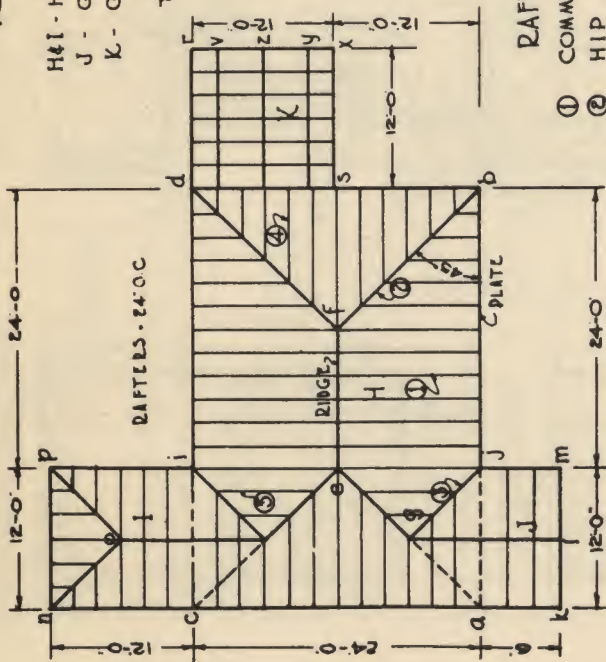
CASEMENT - INTERIOR
SCALE 3" = 1'-0"

ROOFS

- H-I - HIP ROOF
- J - GABLE ROOF
- K - GAMBREL ROOF

TO DRAW REGULAR PITCH ROOF PLAN

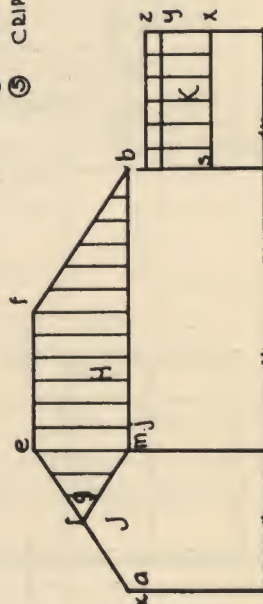
- 1 DRAW RECTANGLE abcd
- 2 DRAW 45° HIP LINES ac, ce, fd, fd.
- 3 DRAW HIP & VALLEY LINES OF PROJECTIONS cnpj & atmj
- 4 DRAW ALL RAFTERS



PLAN

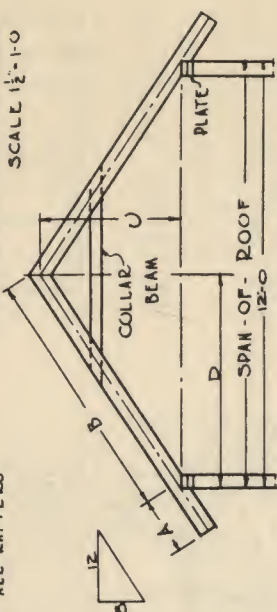
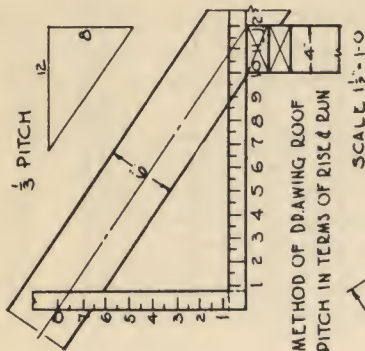
RAFTERS

- ① COMMON
- ② HIP
- ③ VALLEY
- ④ JACK
- ⑤ CRIPPLE



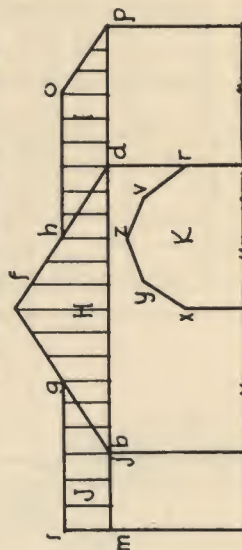
FRONT ELEVATION

SCALE 1/8" = 1'-0"



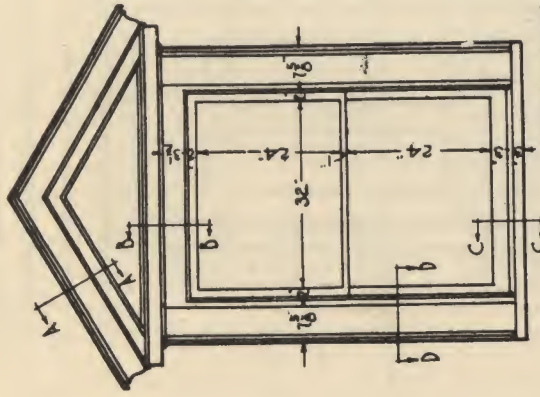
- A LOOKOUT
- B RAFTER
- C RISE
- D RUN

PITCH-OF-ROOFS SCALE 1/2" = 1'-0"

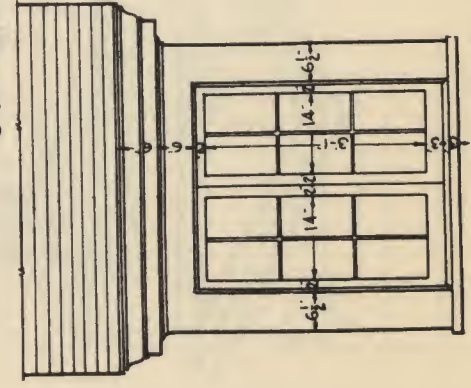


SIDE ELEVATION

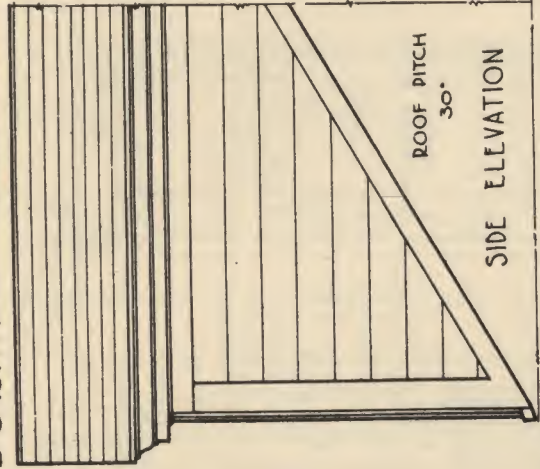
DORMER WINDOWS



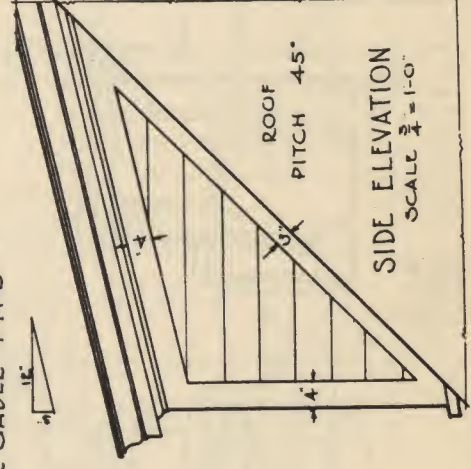
COLONIAL OR GABLE-TYPE



LIFT-TYPE

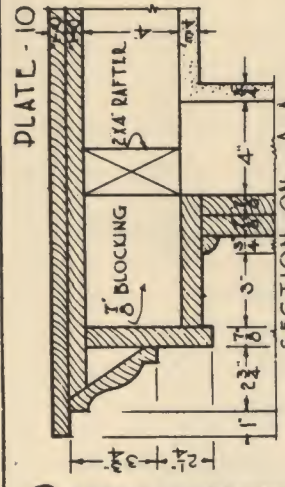


SIDE ELEVATION

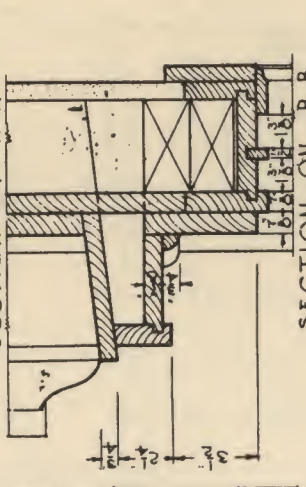


SIDE ELEVATION

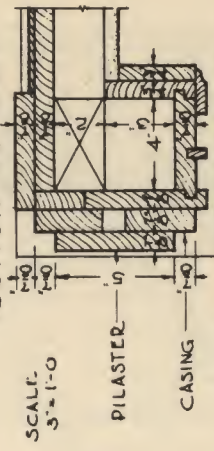
SCALE $\frac{1}{2} = 1-0$



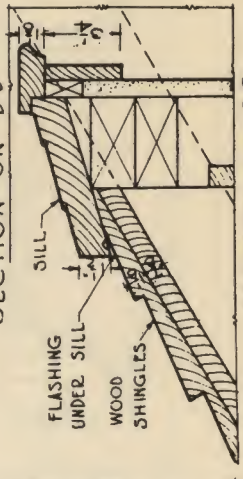
SECTION - ON - A - A



SECTION - ON - B - B



SECTION - ON - C - C



SECTION ON - D - D

SCALE: $\frac{1}{2} = 1-0$

PILASTER

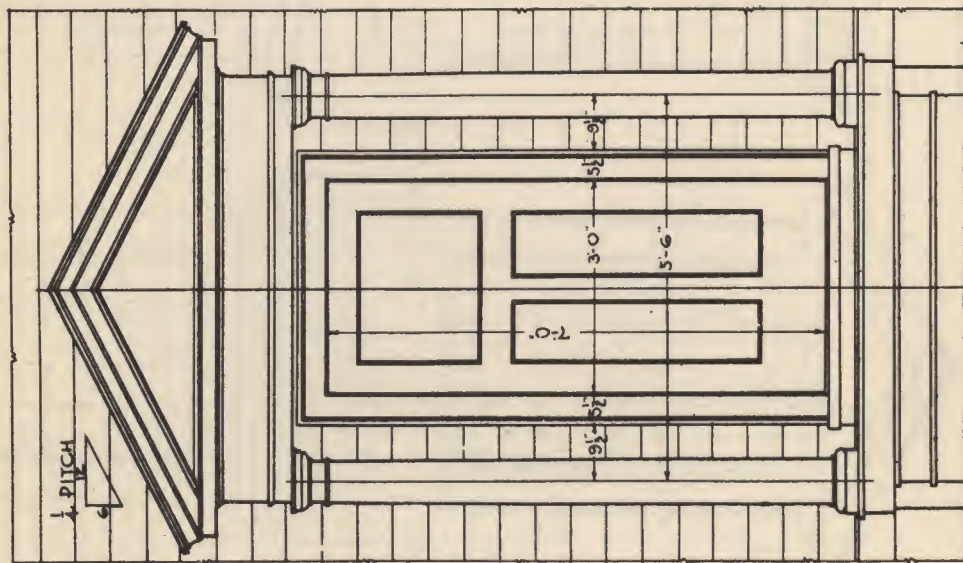
CASING

FLASHING UNDER SILL

WOOD SHINGLES

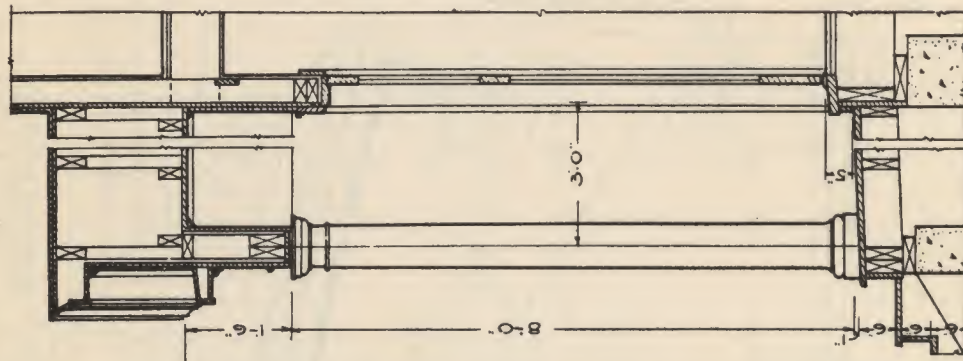
PLATE - 10

PORCH-DETAILS



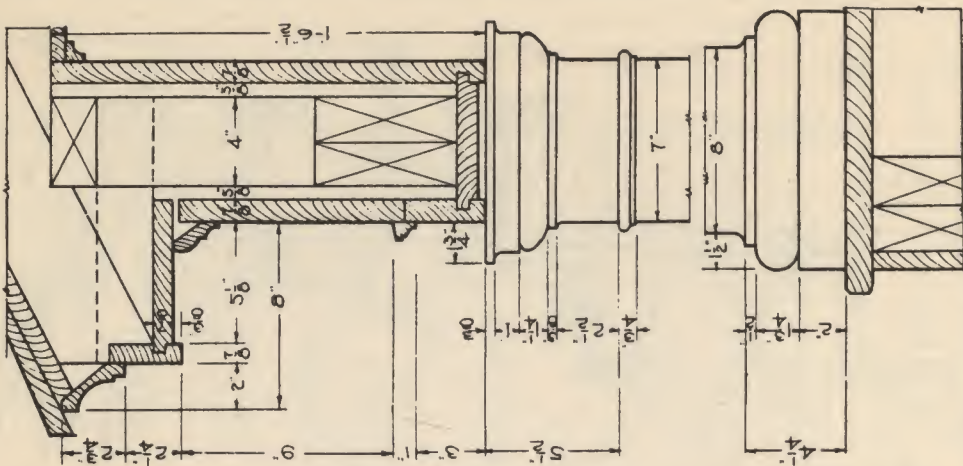
FRONT ELEVATION

SCALE 1/2" = 1'-0"



SECTION

SCALE 1/2" = 1'-0"

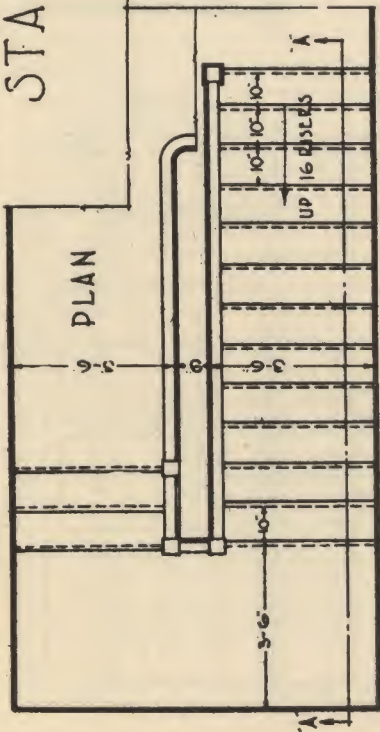


CORNICE & COLUMN-DETAIL

SCALE 3/4" = 1'-0"

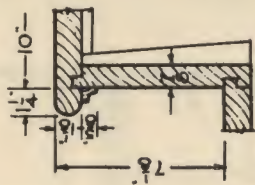
STAIRS

PLAN

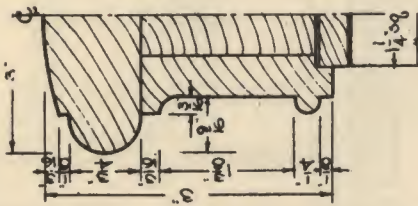


RISER & TREAD

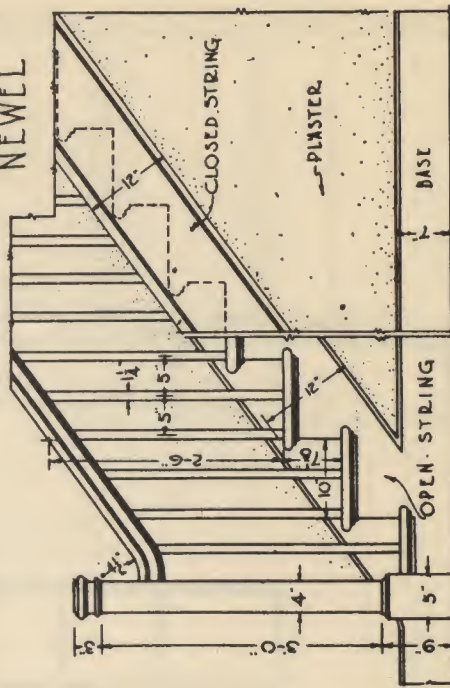
SCALE 3" = 1'-0"



RAIL
FULL SIZE

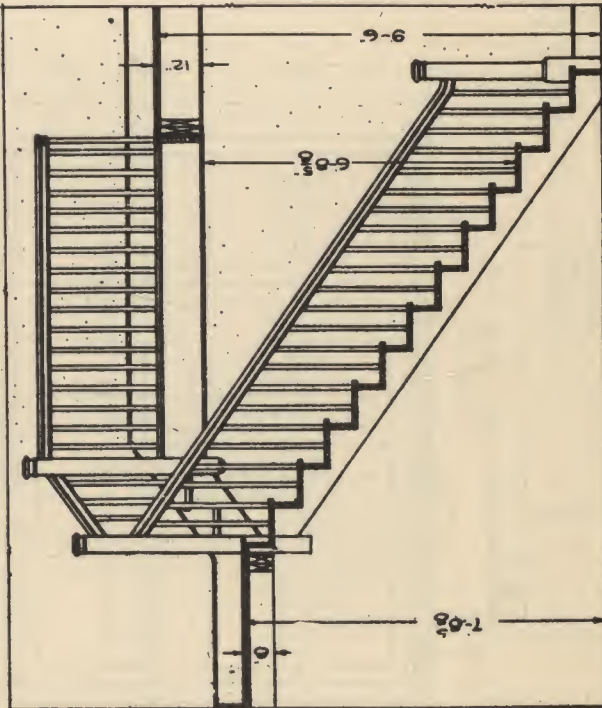


NEWEL

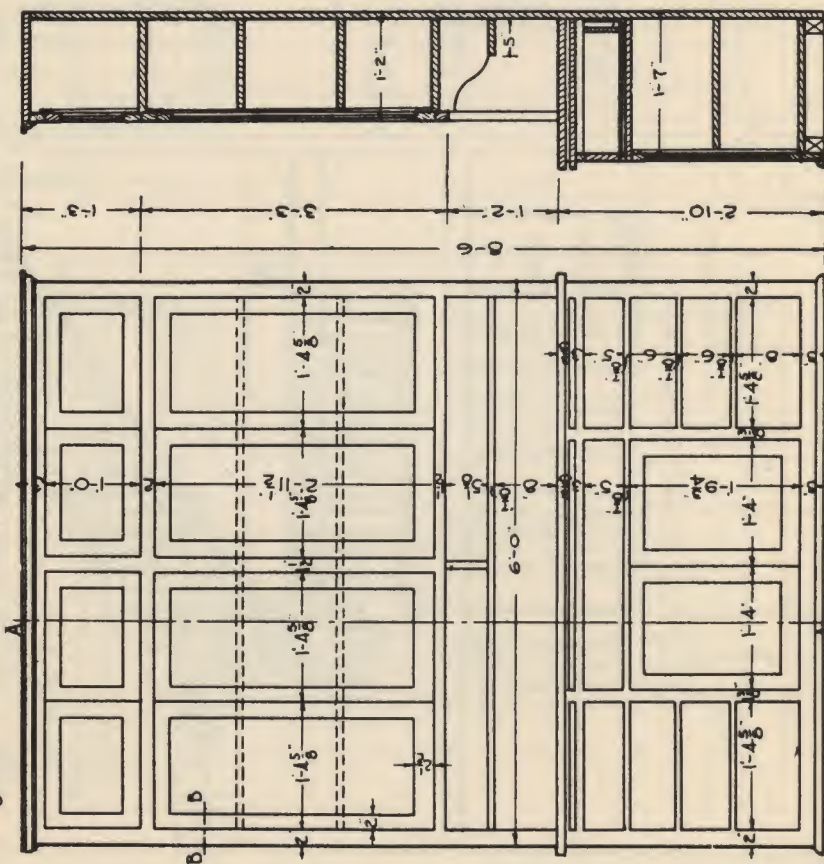


SIDE ELEVATION
SCALE 1" = 1'-0"

SECTION - ON - A-A
SCALE 1/2" = 1'-0"



SECTION. B·B
FULL SIZE

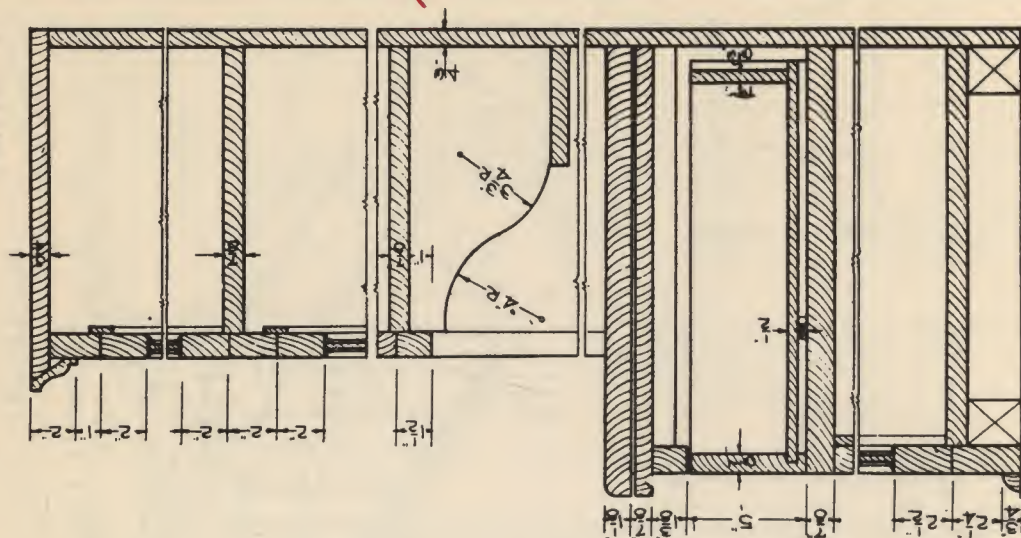


FRONT ELEVATION

SCALE 1"=1'-0"

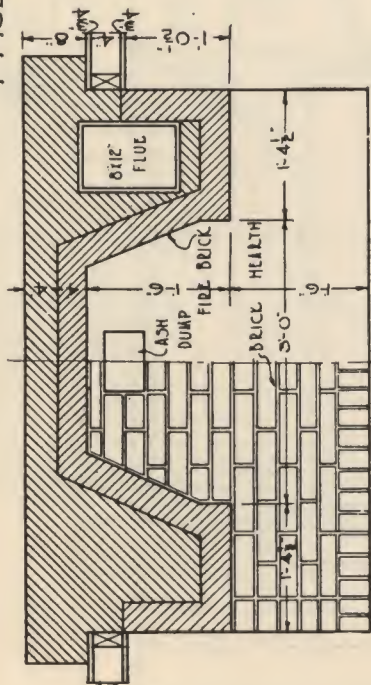
SECTION-A-A

PLATE-13

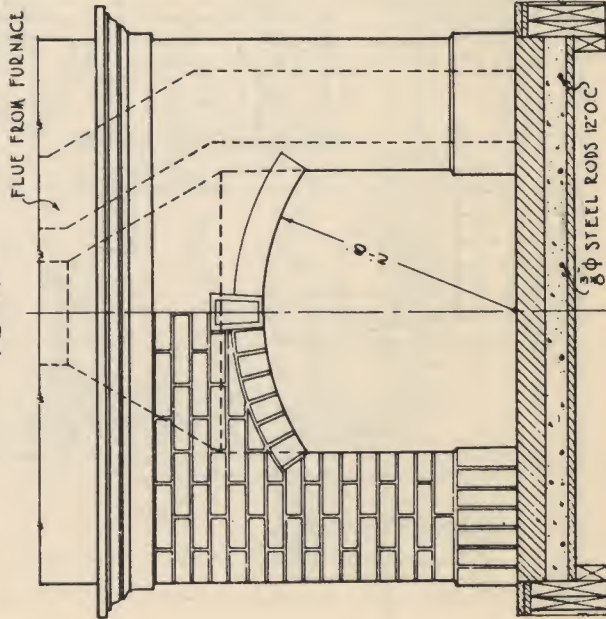


DETAIL OF SECTION - SCALE 3"=10'

FIREPLACE

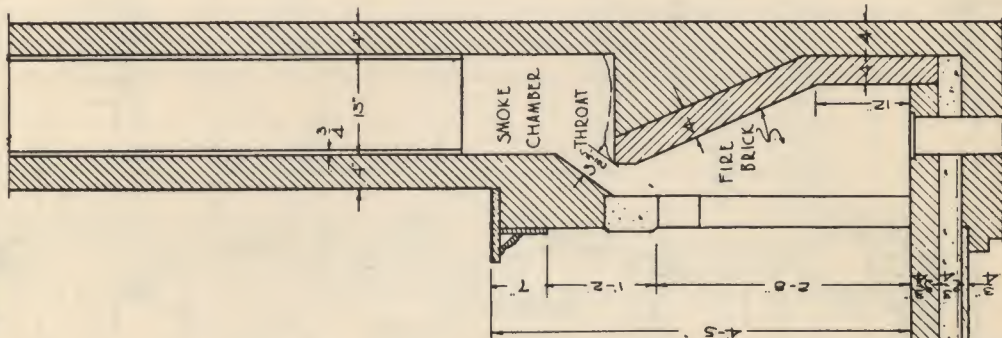


PLAN

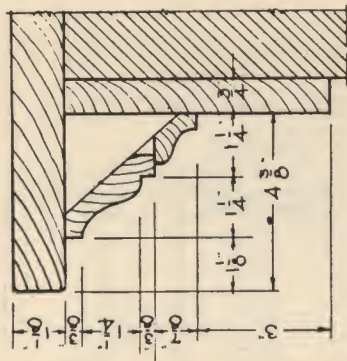


ELEVATION

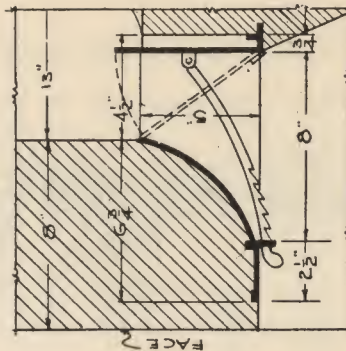
SCALE 1"=1'-0"



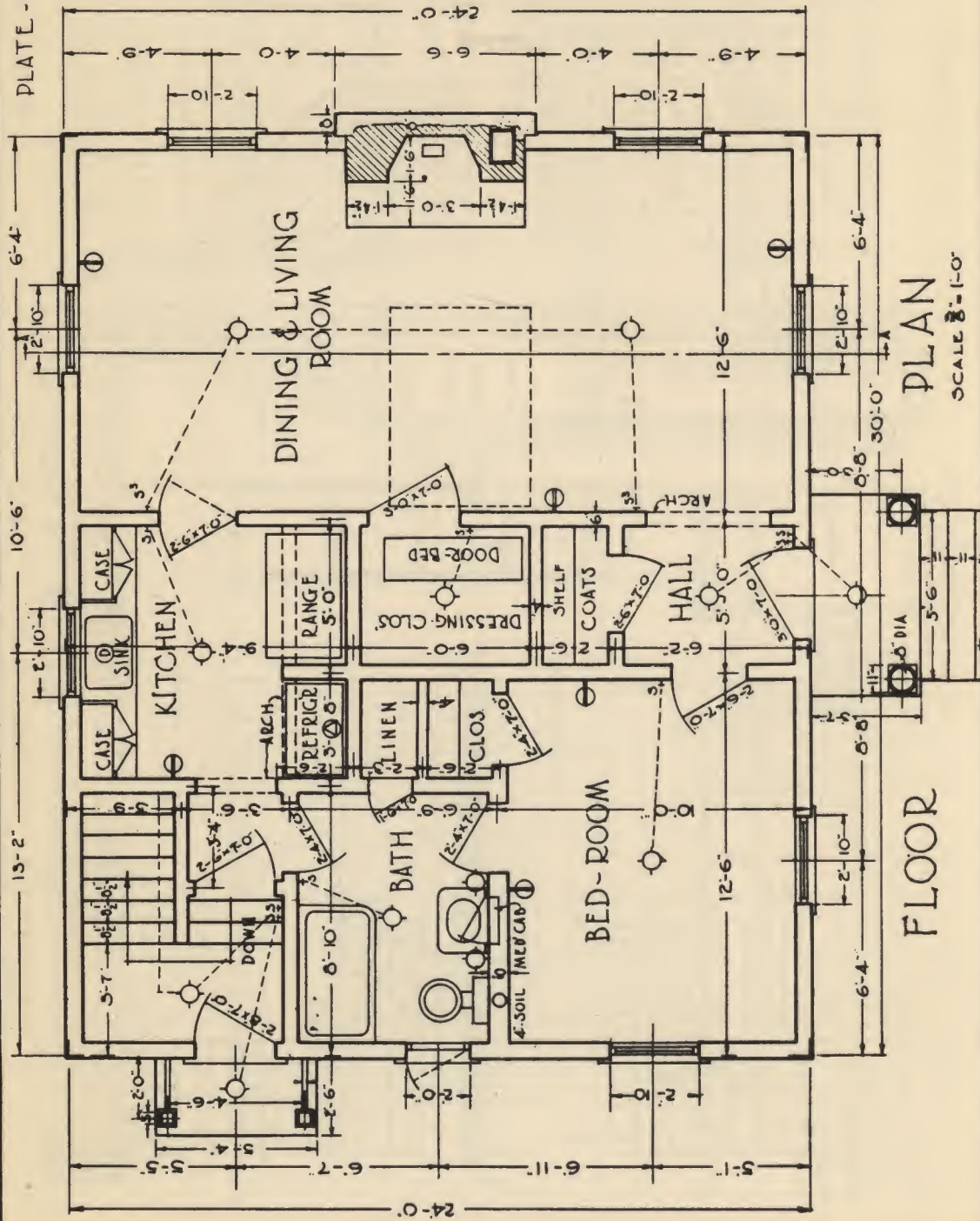
SECTION



DETAIL OF MANTEL
SCALE 1/2"=1'-0"



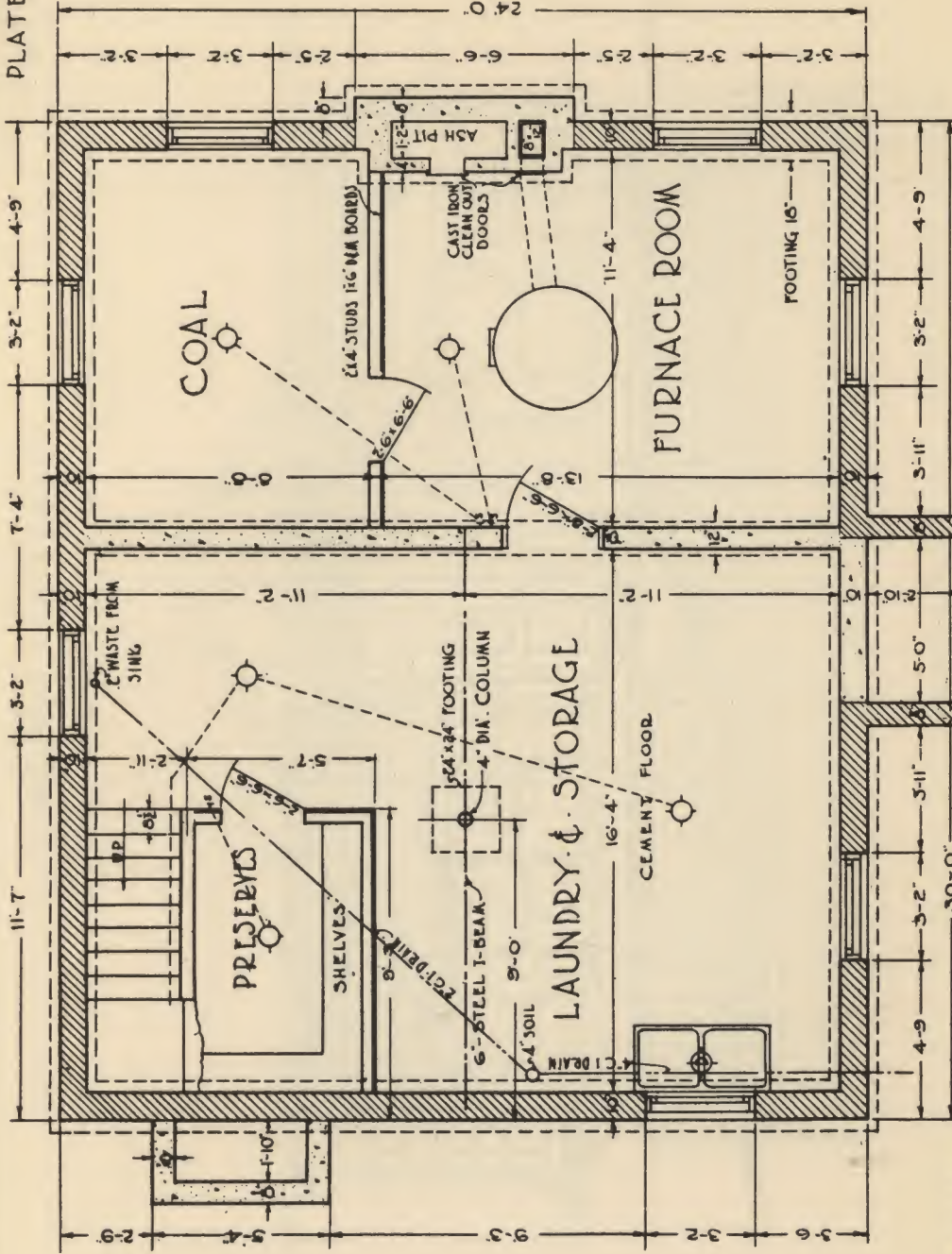
PATENT - DAMPER
TO BE PLACED IN THROAT
FOR REGULATING DRAFT
SCALE 1/2"=1'-0"



FLOOR

PLAN

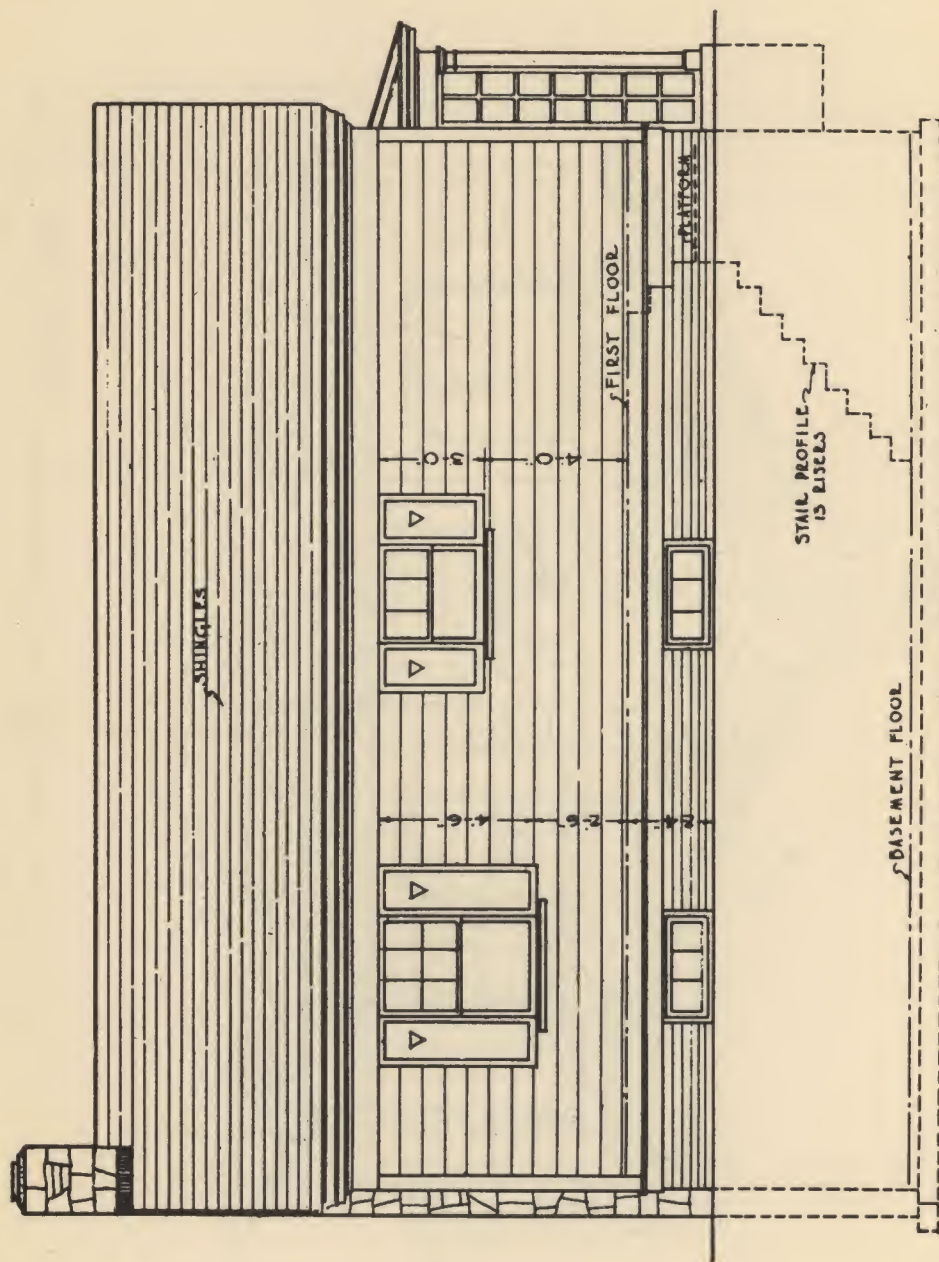
SCALE 3/8" = 1'-0"



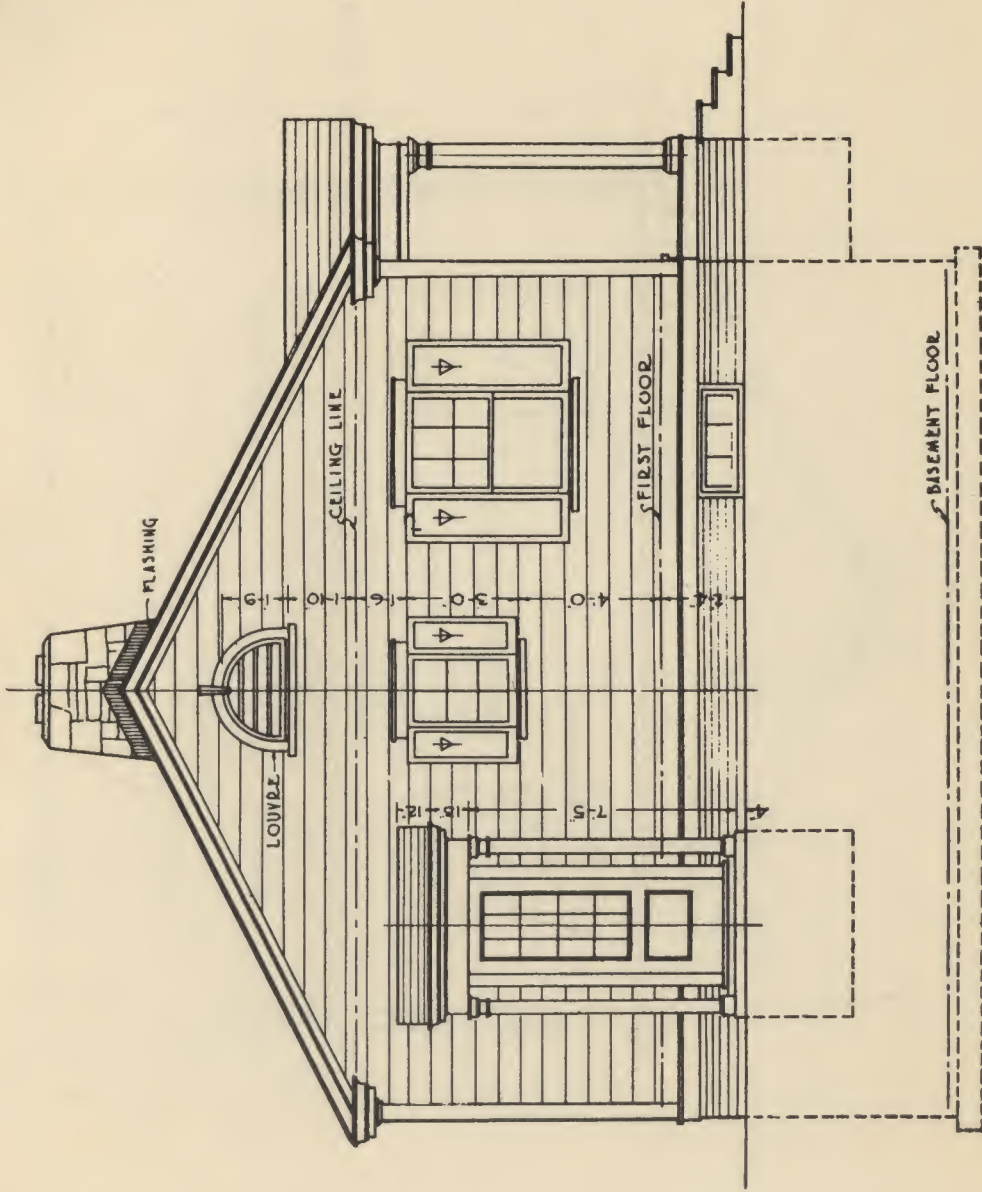
PLAN
SCALE 3/8" = 1'-0"

BASEMENT

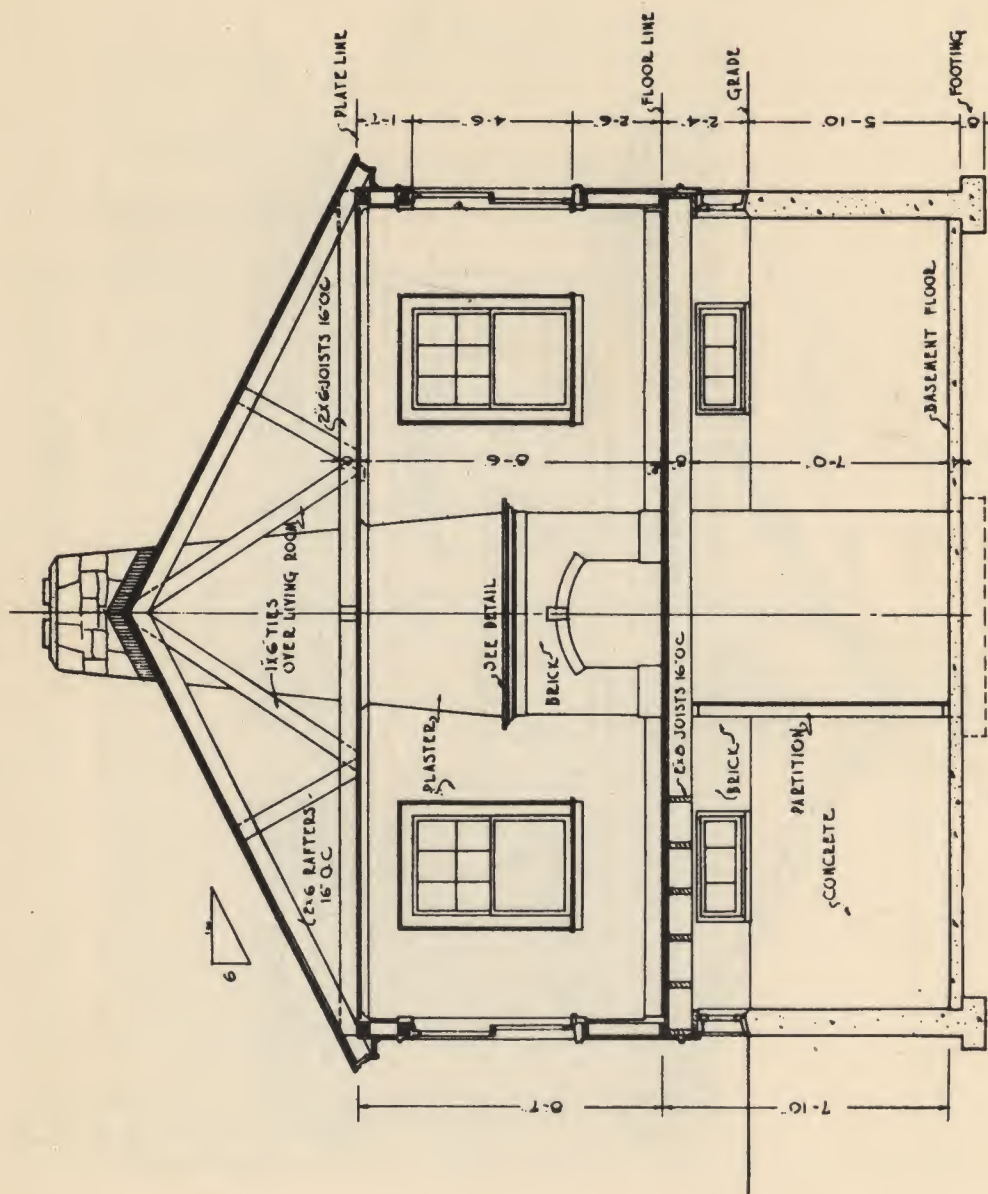
CONCRETE WALL
BELOW GRADE
BRICK ABOVE



REAR ELEVATION



LEFT-SIDE-ELEVATION



SECTION ON A-A

